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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,456	11/05/2001	James R. Brown	GM50053	1844

20462 7590 11/17/2003

SMITHKLINE BEECHAM CORPORATION
CORPORATE INTELLECTUAL PROPERTY-US, UW2220
P. O. BOX 1539
KING OF PRUSSIA, PA 19406-0939

EXAMINER	
SAIDHA, TEKCHAND	
ART UNIT	PAPER NUMBER
1652	

DATE MAILED: 11/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/009,456	BROWN ET AL.	
	Examin r	Art Unit	
	Tekchand Saidha	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2003* .

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *1-33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *34-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. ***Election***

Applicant's election of Group IX (claims 34-40), species 'aroA activity of synthesis of p-aminobenzoate', filed August 1, 2003 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1-33 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention, the requirement having been traversed.

2. Claims 34-40 are pending and under consideration in this examination.

3. ***Specification***

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

4. The bibliographic data sheet for this case shows the following 3 inventors : James R. Brown, Berwyn, PA; Alison F. Chalker, Trappe, PA; Lisa K. Katz, Newtown, PA; as

compared to the 'Oath or declaration' which names a total of 7 inventors. Correction may be requested, if required, by filing for the 'corrected filing receipt'.

5. ***Claim Rejections - 35 USC § 112*** (first paragraph)

Enablement

Claims 34-40 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an *in vitro* method of inhibiting AroA polypeptide of SEQ ID NO: 2 or 4 from *Streptococcus pneumoniae*, does not reasonably provide enablement for any method (*in vitro or in vivo*) for inhibiting an activity of AroA polypeptide, such as synthesis of p-aminobenzoate (an aromatic amino acid). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

Back ground :

AroA polypeptide as per Applicants definition is the same (5-enolpyruvylshikimate-3-phosphate synthase or **EPSP synthase**). EPSP synthase catalyzes the sixth step in the shikimate pathway leading to the biosynthesis of aromatic amino acid. EPSP synthase catalyzes the reversible transfer of enolpyruvyl (carboxyvinyl) group from PEP

(phosphoenolpyruvate) to the 5-hydroxyl group of S3P (shikimate 3-phosphate) [*see* Ream et al. (1988), Plant Physiol. 87 : 232-238, and references therein)]. Synthesis and characterization of **n-amino-glyphosate** as a potent analog inhibitor of *E. coli* EPSP Synthase (Organic and Medicinal Chemical letters, 3 (12) : 2863-2868, 1993) is described. Characterization of EPSP synthase from *Streptococcus pneumoniae* is also described [Du et al. 217th ACS National meeting , Anaheim, California, March 21-25, 1999 (see the enclosed abstract)].

With this background, claims 34-40, are drawn to an activity of EPSP synthase, which is the synthesis of p-aminobenzoate, and neither such an activity is catalyzed by the EPSP synthase or AroA polypeptide, nor the synthesis of p-aminobenzoate has been shown to be measured or has method step which measures the formation or synthesis of p-aminobenzoate.

Further, the claimed method uses EPSP synthases from any source hither to unknown or described. However, in this case the disclosure is limited to the nucleotide and encoded amino acid sequence of SEQ ID NO : 2 and 4 [EPSP synthase from *Streptococcus pneumoniae*].

While techniques of protein purification and method in enzymology would provide considerable guidance to one skilled in the art to prepare the EPSP synthase from *a variety of sources*, it is not routine in the art to screen for EPSP synthase from *any source*, or those having bactericidal properties, because of the known fact in the art protein purification wherein the same enzyme from a different genus or species may require a different protocol for purification and may present diverse purification problems; and the proteins from diverse source will have very varying physical, chemical, inhibition or kinetic properties. Thus the instant claims, employ composition(s) requiring the EPSP synthase *or AroA polypeptide* to catalyze the synthesis of p-aminobenzoate and that cannot be made with a reasonable expectation of success, because the synthase in question can catalyze the formation of S3P (shikimate 3-phosphate) from PEP (phosphoenolpyruvate).

The specification does not support the broad scope of the claims which encompass a wide variety of EPSP synthases coupled with lack of ability of synthases to synthesize p-aminobenzoate or wherein the synthases have been shown to have bactericidal properties.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims as discussed above. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, optimizing and practicing a method lacking all the elements of the assay composition having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue in using the modified enzyme in the method claimed. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

6. Claims 34-40 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claims 34-40 recite 'AroA polypeptide' or 'activity of AroA' (claim 34-35, 37, 39); genus : Staphylococcus or Streptococcus (claim 36, 38, 40) However, no species or

genus is described their structure. Further, description to 'AroA polypeptides' from any source by their structure is lacking. Claims 34-40 recite 'effective amount of an antagonist'. No description of any antagonist is present and therefore arriving at a composition containing a effective amount of a antagonist, lack adequate description of structure or the amount of the antagonist required for inhibiting the AroA polypeptide.

The specification, however, only provides two representative species from *Streptococcus pneumoniae* of SEQ ID NO : 2 & 4. There is no disclosure of any particular structure to function/activity relationship in the disclosed species to other species where such sequences are conserved in order to establish a relationship among species in order to allow one skilled in the art to make and use EPSP synthases from any source or species. The specification also fails to describe additional representative species of these EPSP synthases by any identifying structural characteristics other than the properties or activity recited in claims, for which no predictability of structure is apparent. Given this lack of additional representative species, and clearly defined method steps in order to synthesize p-aminobenzoate,

Applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise, and exact terms that a skilled artisan would recognize Applicants were in possession of the claimed invention.

7. ***Claim Rejections - 35 USC § 112*** (second paragraph)

Claim 35-36 (last line) recite 'killing' or 'slowing' or 'growth'. The claim is unclear with the inclusion of one two many 'or'. Amending the claim to recite 'killing or slowing growth', will overcome this rejection.

Claim 36 is included in the rejection for failing to correct the defect present in the base claim(s).

8. Claims 34-40 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: (1) elements or ingredients of the composition that will allow the synthesis of p-aminobenzoate, and (2) assay that will measure the formation of p-aminobenzoate.

9. ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 30-40 are rejected under 35 U.S.C. 102(a) or 102 (e) as being anticipated by Brown et al. [USP 5,883,239]. Brown et al. teach characterization of AroA polypeptides from Streptococcus pneumoniae and it use in a method for screening antagonists/agonists of the enzyme (see abstract, column 20] and using AroA polypeptide for screening antibacterial compound (see abstract and column 26). Further, the patent teaches inhibition of the conversion of S3P to 5-EPS-3P, leading to prevention of the synthesis of aromatic amino acids, p-aminobenzoate

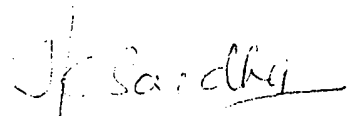
(precursor for folate) and ubiquinone. Inhibition of this enzyme is disclosed as a valid antibacterial strategy (see Example 2, column 26). The reference anticipates the claims.

10. No claim is allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tekchand Saidha (Ph.D.) whose telephone number is (703) 305-6595. The examiner can normally be reached on Monday-Friday from 8:15 am to 4:45 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy, can be reached at (703) 308-3804. The fax phone number for this Group in the Technology Center is (703) 308-0294.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.



Tekchand Saidha
Primary Examiner, Art Unit 1652
November 6, 2003